

## THE GOODS: PRO REVIEW

Phase One introduces a mind-boggling 60.5-megapixel digital back with speed-boosting Sensor+ technology.

BY STAN SHOLIK

# *Beyond bigger and better*

PHASE ONE  
P65+ DIGITAL BACK

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With each new digital back from Phase One, we're reminded technology progresses, despite our wish that it would pause long enough for us to catch up. Sometimes a new technology brings benefits we hadn't realized we could use until we had them; such is the case with the Phase One P65+ digital camera back.

I was skeptical about the need for a 60.5-megapixel sensor when I read about the P65+. Yes, it's a boon for wide-angle shooters to be able to cover the full 645 format without cropping. But, except for landscape and art photographers who make really large prints to be viewed from a yard or two away, who really needs to produce 350MB, 16-bit files that yield 22 x 30-inch, 300 dpi prints?

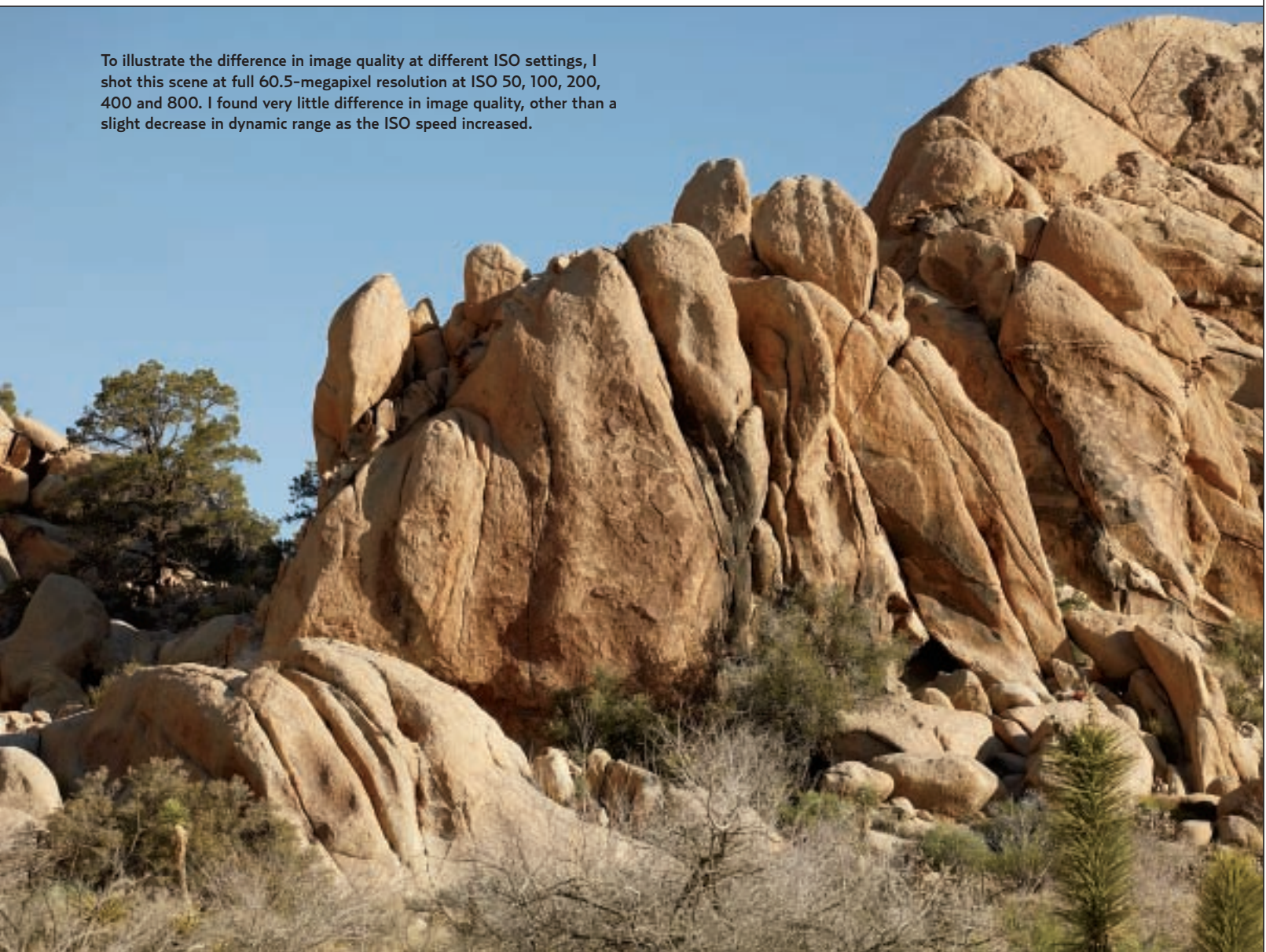
With the P65+ in hand, it didn't take me long to see how much more than that it has going on. It's built-in capabilities will be useful to any professional photographer with deep enough pockets to afford it, some of which are unlikely to be available from any other manufacturer. Chief among them are Sensor+ technology, a very high-speed capture rate, and superior image quality.

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The P65+ mounted on the Phase One camera is an ideal combination for making in-studio product shots when the back is tethered to a Mac or Windows computer running Capture One v 4.8 DB or Pro software. Resolution is so high that every defect in the glass and bottle label is visible and will need retouching.

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To illustrate the difference in image quality at different ISO settings, I shot this scene at full 60.5-megapixel resolution at ISO 50, 100, 200, 400 and 800. I found very little difference in image quality, other than a slight decrease in dynamic range as the ISO speed increased.



This is a 1:1 crop of the image at ISO 50.

ISO 100

ISO 200

ISO 400

ISO 800

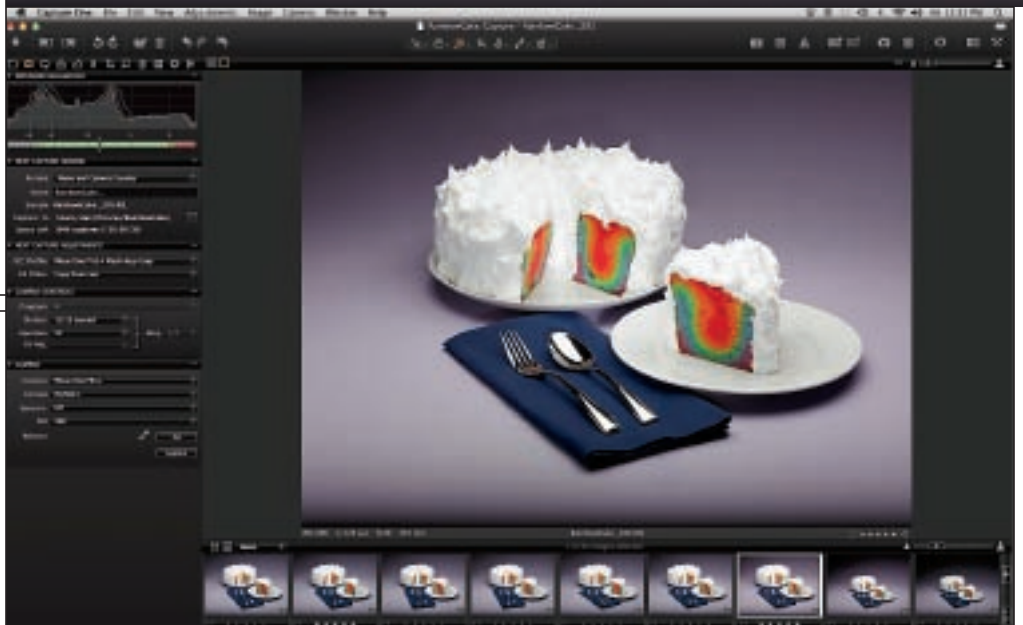
Sensor+ technology was developed under the guidance of Phase One—holder of the proprietary rights to its use—by Dalsa, one of the two companies producing sensors for medium-format backs. With Sensor+, the 6-micron pixels of the 60.5-megapixel array are grouped in a technology called “binning,” which allows the sensor to also function as an effective 15-megapixel array of 12-micron pixels. The full area of the sensor is still used, and without cropping.

The 15-megapixel Sensor+ array has four times the ISO rating of the 60-megapixel array. This 4X increase in ISO speed results in effective ISO ratings of 200 to 3200 with Sensor+ activated. The 15-megapixel file will produce a 15 x 11.2-inch image file at 300 ppi, large enough for most print applications.

There are other advantages to Sensor+. Capture speed increases from just under one capture per second to nearly 1.5 captures per second. That might sound slow compared to the capture rate of a digital SLR, but the P65+ will keep capturing images at this rate until the CF card or hard drive is full. Without the bother of filling a buffer and waiting for it to clear, the P65+ is capable of making about 86 captures per minute, versus about 60 captures per minute with the Canon EOS 1Ds Mark III DSLR. Sensor+ technology enables the P65+ to be converted from use as an ultrahigh-resolution studio or location camera back to use as a fashion, beauty, portrait or wedding back that can even be handheld

**Top:** I shot this cake with and without Sensor+ activated. I couldn't see the difference between the ISO 50 image with Sensor+ turned off and the ISO 200 image with Sensor+ turned on, but the two additional f/stops gave me the depth of field I needed. This is the image with Sensor+ turned on.

**Bottom:** You can control both the Phase One camera and P65+ digital back and make captures without leaving the computer.



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On location, the P65+ is at its best shooting in difficult situations, such as sunrise in the high desert. Due to its high-resolution and 16-bit capture, the P65+ photographs delicate gradations in the sky without banding. The image file contains enough information to bring up shadow information while holding highlights.

and take available-light-only photographs if needed, all at the push of a button.

That higher ISO rate in no way comes with lesser image quality. CCD sensors (as in the P65+) have lagged behind CMOS sensors in reducing noise at high ISO, but at full-resolution capture, P65+ images appear to exhibit half the noise compared to those from previous Phase One backs; i.e., at ISO 800, the P65+ at 60.5-megapixel resolution manifests about the same amount of noise as the P45+ does at ISO 400. With Sensor+, ISO 3200 yields about the same amount of noise as the previous model's sensor does at ISO 400. Bottom line, there is visible noise in the shadows, but it's mostly luminance noise, which is easily controlled in post-processing, making ISO 3200 quite usable.

The only downside I found with Sensor+ in the P65+ is its inability to be used for

exposures longer than 1 minute, with or without the Sensor+ activated. (For more info on Sensor+ technology and its advantages, visit [www.phaseone.com](http://www.phaseone.com)).

While Sensor+ technology adds to the versatility and value of the P65+, I'd guess most photographers will choose it for its full-frame and full-resolution capabilities. For that, it's best to shoot with the back tethered to a computer running Phase One Capture One Pro or Capture One 4 DB software, v. 4.8 or later, to have full control of the P65+. You can set the white balance and ISO, activate and deactivate Sensor+, and control such camera functions as the aperture (in full stops) and the shutter speed from the Capture One software.

Although the P65+ documentation includes instructions for performing live previews with several cameras, including the

Mamiya 645AFD III, the software lacks a Live View feature.

In studio or out, full-resolution or Sensor+ capture, images from the P65+ are gorgeous. At full resolution, the image detail approaches that of scanned 4x5 film, without the grain (for better or worse, depending on your taste), and without having to navigate through the scan to clean it up (better, no question). It doesn't yield quite the quality of a scanning back, but then it's unlikely that, when it arrives, even a 4x5 single-shot back will be able to do that. For now, the Phase One P65+ digital back has not only the height of digital sensor technology, but is also the most versatile back on the market.

MSRP of the P65+ back for the Phase One/Mamiya 645AFD III camera is \$39,990 with the Classic Warranty. ■

## specs: Phase One P65+

**SENSOR:** Full-frame CCD, 53.9mm x 40.4mm (effective)

**LENS FACTOR:** Full frame / 1.0

**RESOLUTION:** 60.5 megapixels, 8,984 x 6,732 active pixels (6 x 6 microns)

**IMAGE RATIO:** 4:3

**DYNAMIC RANGE:** 12.5 f/stops

**EXPOSURE:** 1/10,000 second to 1 minute

**ISO:** Full-resolution capture mode—50, 100, 200, 400, 800; Sensor+ capture mode—200, 400, 800, 1600, 3200

**CAPTURE RATE:** 1.0 second/frame to 1.2 seconds/frame depending on camera platform

**BATTERY:** 7.2 V lithium ion 2500mAh, 2,000-capture lifetime

**LIVE PREVIEW:** Yes

**IR FILTER:** Mounted on CCD

**COOLING SYSTEM:** Passive

**LCD:** 2.2-inch, 230,400 pixels, 160-degree viewing angle

**MSRP:** \$39,990